TSL910 RSL900 STL SYSTEM

OPERATOR AND SERVICE MANUAL

INSTALLATION

The installation of any electrical equipment should be made by trained technicians who know the risks related to handling electrical supplies.
Before proceeding with the installation, it is necessary to verify that the equipment is in compliance with the rules of the Country where the unit will operate. Before connecting the transmitter to the AC source, it is necessary to verify that the voltage range reported in the back of the unit matches the voltage of the AC supplied. Here are some important details about electrical systems.

ELECTRICAL SYSTEM

Depending upon the exact location of the site, electricity is subject to more or less fluctuations in power. Fluctuation in voltage is not the only issue you can have with electricity. Most of the time, you can have spikes and peaks of power that last for very short intervals but that are sufficient to destroy your device. There are many devices on the market that protect the AC line and they are all useful (surge suppressors, stabilizers etc.). However, only one is really mandatory to avoid disasters caused by the AC. It is called an ISOLATION TRASFORMER. The isolation transformer creates a physical separation from the input of your AC line to the trasmitter. Anything destructive that would come through the AC, stops in the transformer and cannot reach the transmitter.

This device is indispensable because, in the last 10 years, the broadcast industry has developed new smaller power supplies that are very light. They did this to allow the units to be lighter for easy trasportation. Unfortunately, the side the downside is that the big transformers that were located inside the units protecting them, have been removed. The new AC-DC power supplies do not give any sort of protection. The isolation transformer is necessary to give that protection. A big isolation transformer installed where the AC enters the site protect not only one specific device, but all of the equipment that are in the same building.

If you want to protect only one specific device and you want to know what size of tranformer you will need, you can multiply the output watt power of your device by 2.5 and you will have the Watts needed by your isolation transformer. (Example: for a 1000 W transmitter you need at least a 2.5KWatt isolation transformer). If you want to protect more devices you should add the wattage of every unit and multiply by 2.5.

Once you have your transformer installed, you need to verify how good your ground system is. Every good electrician should have a proper device to measure the ground. Money invested in measuring your ground can fix problems and avoid bigger expenses in the future. Every rack and every unit must be connected to ground.

Once that the electrical connections have been verified, you need to connect the antenna to the transmitter through the coaxial cable. Verify that the connector is properly tighten and, in case you have a rigid coaxial cable feeding the transmitter, install a pigtail with proper power capability and more flexibility so that you do not put too much pressure on the connector.
Before proceeding to operate, we strongly recommend that you make double sure an adequate grounding system has been set. Nicom will not be held responsible for damages to persons and materials if these guidelines are not followed.

The positioning of the transmitter inside the room is equally important. If the unit is placed in a rack, make sure there is enough space around for the air to circulate. Remember that fresh air is positioned lowest in the room. Place your transmitter as low as possible, but not too close to the floor to avoid damages due to humidity. Leave at least 2 feet of space behind the transmitter to allow the warm air flow to circulate without obstruction. We highly recommend to keep the room cool with an air conditioning system, so that the unit can work at a constant temperature without excessive humidity (between 60 and 75 degrees); a temperature over 75 degrees causes the unit to work in a stressed environment which can negatively impact the life and performance of the unit.

CONNECTION AND OPERATION

1. First, connect the transmitting cable coming from the antenna to the corresponding connector placed in the rear panel of the unit; check that it is tightened properly.
2. Then connect the plug to the AC mains and also make a good ground connection.
3. Once these procedures have been performed, you can turn the power on. The transmitter requires about 20 to 30 seconds to perform the internal checks and lock onto the frequency. After that, it will start delivering power.
4. Always start with low power and keep an eye on the reading of the reflected power to be sure that your system (antenna, cables etc.) is performing well.
5. Allow the unit to warm up for about 30 minutes and then you can increase the power to the desired level.
6. Wait another 30 minutes to verify that everything is working properly.
7. Check the air coming out from the rear fans and verify that it is just warm air not overly hot. At this point, if everything looks good, you can consider your installation successful.

SAFETY SUGGESTIONS

Thank you for your business. We at Nicom appreciate our partnership with you and your broadcasting team. We proudly stand behind our products. Regardless of how well our electrical equipment is designed; personnel can be exposed to dangerous electrical shock when protective covers are removed for maintenance or other activities. Therefore, it is incumbent on the user to see that all safety regulations are consistently observed and that each individual assigned to the equipment has a clear understanding of first aid related to electrical shocks (see next pages).

In addition, these safety practices **must** be followed:

- Do not attempt to adjust unprotected circuit controls or to dress leads with the power on.
- Always avoid placing parts of the body in a series between ground and circuit points.
- To avoid burns, do not touch heavily loaded or overheated components without precaution.
- Remember that some semiconductor cases and solid-state circuits carry high voltages.
- Do not assume that all danger of electrical shock is removed when the power is off. Charged capacitors can retain dangerous voltages for long periods of time after the power is turned off. These capacitors should be discharged through a suitable resistor before any circuit points are touched.
- Do not take chances. Be fully trained. Nicom equipment should be operated and maintained by fully qualified personnel.
- Do not service equipment alone and do not perform internal adjustments to this unit unless another person is capable of rendering first aid and resuscitation is present.
- Some components used in the construction of this equipment contain Beryllium Oxide (BeO). This substance is harmless as it is, but becomes highly dangerous if it is ground to powder. Special procedures of disposal must be observed in case of failure of these devices.

NOTE: This section is not intended to contain a complete statement of all safety precautions that should be observed by personnel in using this electronic equipment or others.

Nicom shall not be responsible for injury or damage resulted from improper procedures or from using it by improperly trained or inexperienced personnel.

GENERAL INFORMATION FOR SAFETY

When connecting the equipment to power, please follow these important recommendations:

- This product is intended to operate from a power source that will not apply more than 10% of the voltage specified on the rear panel between the supply conductors or between either supply conductor and ground. A protective- ground connection by way of the grounding conductor in the power cord is essential for safe operation.

- This equipment is grounded through the grounding conductor of the power cord. To avoid electrical shock, plug the power cord into a properly wired socket before connecting to the product input or output terminals.

- Upon loss of the protective-ground connection, all accessible conductive parts (including parts that

  may appear to be insulating) can render an electric shock.
- To avoid fire hazard, use only the fuse of correct type, voltage rating, and current rating. Refer fuse

  replacement to qualified service personnel.
- To avoid explosion, do not operate this equipment in an explosive atmosphere.

- To avoid personal injury, do not remove the product covers or panels. Do not operate the product without the covers and panels properly installed.

GOOD PRACTICE

In maintaining the equipment covered in this manual, please keep in mind the following standards for good safety practice:

- At regular intervals, the condition of the equipment and the correct functioning of protective and safety devices shall be checked by a skilled person approved by the appropriate authority for this duty. Functional checks shall be carried out on interlocking systems of doors, mechanical interlocks, isolating switches, earthing switches, parallel resistances and protective devices against overvoltage and over-currents. The above checks shall not be carried out after the protective and safety devices have operated under faulty conditions. The safety devices shall not be altered or disconnected except for replacement, nor shall the safety circuit be modified without specific approval of the appropriate authority in each case.

- When connecting any instrument (wattmeter, spectrum analyzer, etc.) to a high frequency output, use the appropriate attenuator or dummy load to protect the final amplifiers and the instrument input.

- When inserting or removing printed circuit boards (PCBs), cable connectors, or fuses, always turn off power to the affected portion of the equipment. After power is removed, allow sufficient time for the power supplies to bleed down before reinserting PCBs.
- When troubleshooting, remember that FETs and other metal-oxide semiconductor (MOS) devices may appear defective because of leakage between traces or component leads on the printed circuit board. Clean the printed circuit board and recheck the MOS device before assuming it is defective.
- When replacing MOS devices, follow standard practices to avoid damage caused by static charges and soldering.
- When removing components from PCBs (particularly ICs), use care to avoid damaging PCB traces.

PROCEDURE TO ESTABLISH THE ABSENCE OF VOLTAGE

Follow these simple steps for establish the absence of voltage:

- Before starting work on the equipment, it shall be isolated from the main power supply. This disconnection shall always be checked by visual inspection. Further precautions shall be taken to ensure that the main supply cannot be restored while work is being carried out. After the main supply has been disconnected, all other lines such as the control, interlocking and modulation lines shall be disconnected if they carry dangerous voltage. Moreover, the antenna or the antenna transmission line shall be disconnected from the antenna terminal device to prevent the introduction of dangerous voltage due to antenna pick-up. When disconnection of the antenna or antenna transmission line is not possible, other suitable precautions shall be taken, for example, earthing, when necessary at several places, to establish absence of voltage. These earthing connections shall be very short compared with the wave-length.
- Capacitors, which are connected to a circuit isolated from its supply, shall be discharged (and have their terminals permanently short-circuited, and the casing earthed) during the whole period of the work.
- The electrical charge retained by electrical machinery when stopped may, in certain cases, be sufficient to cause a severe shock. This shall be taken into account when making connections to an apparently "dead" machine. Therefore, all machinery shall be discharged and earthed using an adequately insulated lead for this purpose. The discharge operation shall be repeated several times.

- Before any maintenance work is carried out on automatic or remote-controlled equipment, the remote switching circuits shall be made inoperative.

PROCEDURE FOR DETERMINATION OF THE ABSENCE OF VOLTAGE

After the equipment has been isolated according to the standard EN60215, the absence of voltage shall be determined at the work place. This may be done by the use of voltage indicators, measuring instruments, glow discharge lamps for indicating radio-frequency voltage or other suitable means.

ELECTRIC SAFETY PRECAUTIONS

All parts making up the equipment have danger identification tags (with a yellow background) to highlight the parts dangerous for the operator that has access to the system

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Presence of hazardous energy levels

A hazardous energy level is defined as a stored energy level of 20 J or more, or an available continuous power level of 240 VA or more, at a potential of 2 V or more.

Precautions for Handling Components Containing Toxic Material

The Beryllium (Beryllium Oxide) is used in the construction of some components of the apparatus.
This material, when in the form of fine powder or vapor if inhaled into the lungs can cause respiratory problems. In its solid form, as used herein, can be handled quite safely, but it is prudent to avoid conditions that favor the formation of dust due to abrasion of the surfaces. Because of this risk, you should be very careful in the removal and disposal of these components.

Do not throw them in containers for generic waste material, industrial or domestic, or send via mail. They must be packed separately and clearly identified in safety and to show the nature of the risk and then safely disposed by authorized personnel for toxic waste.Before you remove or replace any RF COMPONENT, make sure that all precautions comply with the recommendations of SAFETY.

This warning label is used for components containing Beryllium Oxide.

ELECTROSTATIC PRECAUTIONS

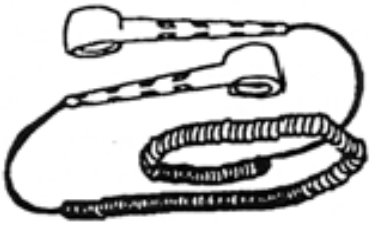
Before removing or replacing any PCB assembly within the equipment, make sure that all precautions comply with ESD protections (ESD = Electro Static Discharge). Make sure that electrostatic discharge protections are reset after maintenance and/or measurement operations.

The tag of CAUTION is used for the majority of electronic devices that are subject to electrical shocks.

If electronic parts have to be touched during installation or repair, please observe the following precautions.

Operators must be equipped with anti-static protection devices such as:

Elastic wristband: to be fixed on the operator's wrist.



Flexible cords: to be connected to the elastic wristband and the special plug on the shelf highlighted with the ESD warning label.

RULES OF FIRST AID

Personnel engaged in the installation, use and maintenance of the equipment must be familiar with the theory and practice of first aid.

FIRST AID IN CASE OF ELECTRIC SHOCK

If someone seems unable to free themselves when they receive an electric shock, disconnect the power before trying to help. A muscle spasm or unconsciousness may render the victim unable to free themselves from the power source.

If power cannot be turned off immediately, very carefully loop a length of dry non-conducting material (such as a rope, insulating material, or clothing) around the victim and pull him free of the power. Carefully avoid touching him or his clothing until free of power.

DO NOT TOUCH VICTIM OR HIS CLOTHING BEFORE POWER IS DISCONNECTED OR YOU CAN ALSO BECOME A SHOCK VICTIM.

EMERGENCY RESUSCITATION TECHNIQUE

Step 1
Check the victim for unresponsiveness. If there is no response, **immediately call for medical assistance** and then return to the person.

Step 2
Position the person flat on their back. Kneel by their side and place one hand on the forehead and the other under the chin. Tilt the head back and lift the chin until teeth almost touch. Look and listen for breathing.

Step 3
If not breathing normally, pinch the nose and cover the mouth with yours. Give two full breaths. The person's chest will rise if you are giving enough air.

Step 4
Put the fingertips of your hand on the Adam's apple; slide them into the groove next to the windpipe. Feel for a pulse. If you cannot feel a pulse or are unsure, move on to the next step.

Step 5
Position your hands in the center of the chest between the nipples. Place one hand on top of the other.

Step 6
Push down firmly two inches. Push on chest 15 times.
CONTINUE WITH TWO BREATHS AND 15 PUMPS UNTIL HELP ARRIVES.

TREATMENT FOR BURNS

Extensive burns and broken skin

- Cover area with clean sheet or a clean cloth.
- Do not break blisters, remove tissue, remove any clothing that is stuck to the skin, and apply an ointment.
- Treat victim according to the type of accident.
- Arrange transportation to a hospital as quickly as possible.
- If arms or legs are affected, keep them elevated.

If medical help is not available within an hour and the victim is conscious and not vomiting, give a solution of salt and baking soda: 1 teaspoon of salt and half of baking soda every 250 ml of water. Make slowly drink half a glass of solution four times and for a period of 15 minutes.Stop at the retching.Do not administer alcoholic beverages

Less severe burns

- Apply cold gauze compresses (not iced) using a cloth as clean as possible.
- Do not break blisters, remove tissue, remove any clothing that is stuck to the skin, and apply an ointment.
- If necessary, put on clean clothes and dry.
- Treat victim according to the type of accident.
- Arrange transportation to a hospital as quickly as possible.

STL TRANSMITTER AND RECEIVER OPERATION

After having unpacked the STL system the first thing to do is to set the transmitter. Connect a 50 Ω load or 50 Ω antenna to the N type connector marked "RF output", connect the equipment into a mains supply (100÷240 VAC) with a good ground system. The transmitter is usually set at a power of 5-6 watts. Switch ON the power and the V POWER led will light.

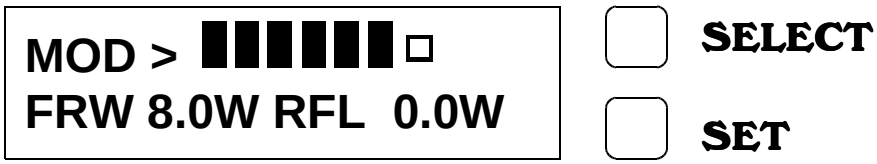
The Display will show:

After few seconds the green PLL LOCK led will light and the Display will show an increasing bar; after a further 5 seconds the green ON AIR LED will light and the unit will start increasing power.

Once the unit has finished the cycle, the display will show the

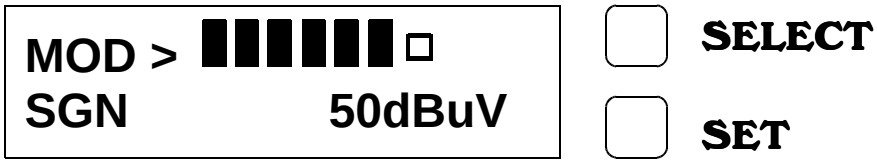
modulation bar ▮▮▮▮▮▫▮▮▮

- Forward Power (FRW 5.0W);
- Reflected Power (RFL 0.1W);



In case of a receiver the display will show the following:

- Level Modulation (MOD >▮▮▮▮▮▫▮▮▮);
- Level Signal(50dBuV).



To display the frequency push and hold the SET key.
In order to display the parameter push and hold the SELECT key.

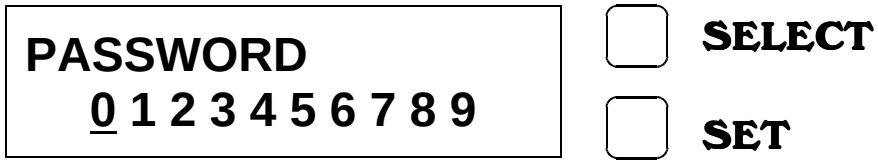
Display Password

The Password is factory set to enable, and is not possible change this SET.

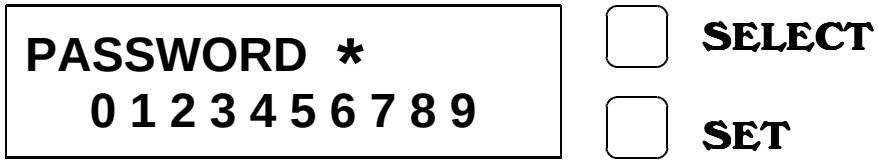
The default password is **1 2 3**.

The way for changing the password is the following:

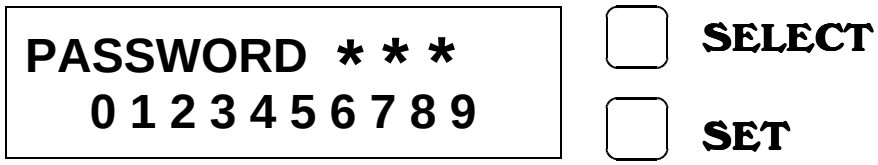
- Press for 3 seconds the SELECT key;



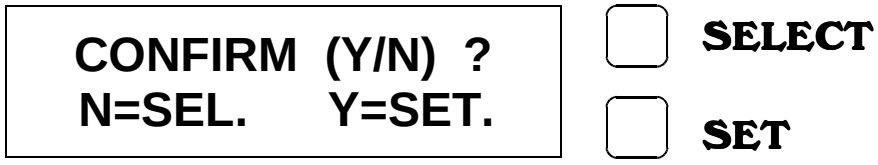
- Press the SELECT key for move the underscore character position at the default digit, and press the SET key to confirm the digit.



Carry out the same operation for the two remaining digits.



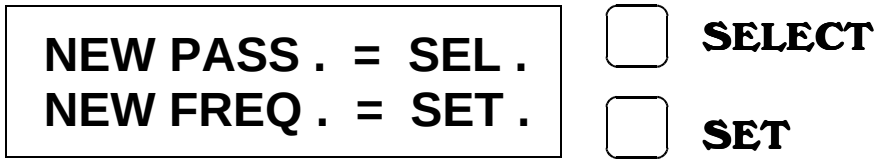
- If the password is corrected press SET key to confirm, otherwise press SELECT key to leave the function.



If the password is not corrected an error is displayed:

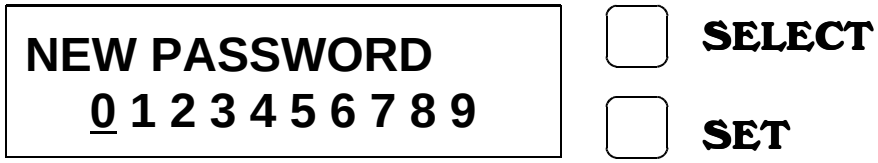
After few seconds display will show again the parameters.

- When the password is corrected the display will show:

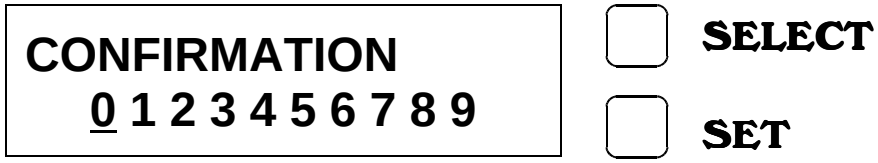


To change the password press the SET key.
To change the frequency press the SELECT key.

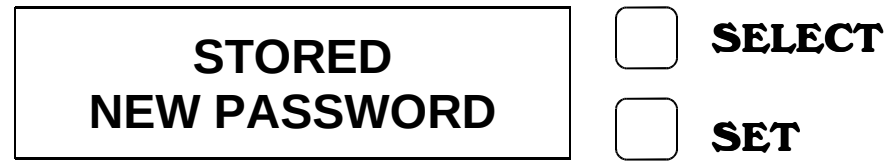
- For changing the password use the same method for the default password:



The confirmation password will be required.



If the password is corrected the display will show:



If the confirmation password is wrong the display will show:

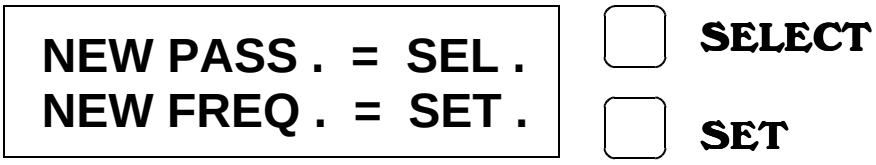
IMPORTANT NOTE

! BE CAREFUL !

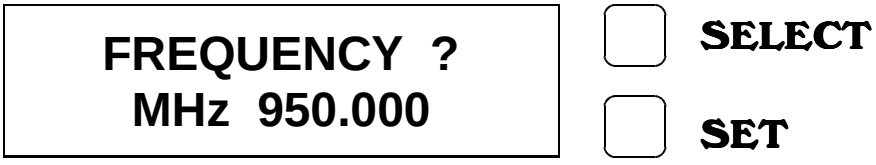
Once the password is set, it must be remembered otherwise neither can the frequency be changed or a new password entered and you will need to return the unit to the Factory for a complete reset.

Display Change of Frequency.

- Press 3 seconds the SELECT key and put the correct password, at this point press again the SELECT key:



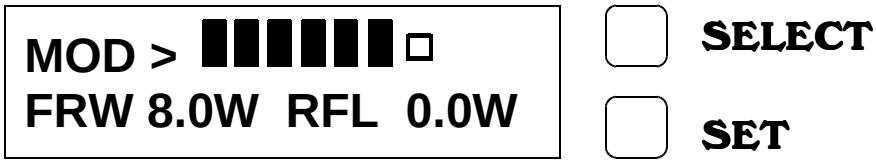
- Press the SELECT key to change the digit and press the SET key to confirm the digit.



The underscore character move the position one place to the left.

When the five digit are changed then press the "SET" key to confirm the new frequency.

After this operation it will follow the "WAIT" cycle and then the display will show the parameters:



After 7 minutes the display light will switch off and the display will show:

Note: RF EXPOSURE SAFETY DISTANCE (only for FCC & IC) RF Exposure Limits for United States of America, according to FCC regulation: setting to the maximum of the output power of the apparatus, to guarantee the limits of exposure declared within this document, it is necessary that the antenna gain used with this device should be 0dBi or less and all persons should maintain a minimum separation distance of 50.12 cm for general uncontrolled exposure and general controlled exposure.

RF Exposure Limits for Canada, according to IC regulation: setting to the maximum of the output power of the apparatus, to guarantee the limits of exposure declared within this document, it is necessary that the antenna gain used with this device should be 0dBi or less and all persons should maintain a minimum separation distance of 52.88 1cm for general uncontrolled exposure and general controlled exposure. Limites d'exposition RF: en réglant au maximum de la puissance de sortie de l'appareil, afin de garantir les limites d'exposition déclarées dans ce document, il est nécessaire que le gain d'antenne utilisé avec cet appareil doit être de 0 dBi ou moins et toutes les personnes doivent conserver une distance de séparation minimale de 52.88 cm pour les expositions générales non contrôlées et les expositions générales contrôlées.

CONDITIONS OF SALE AND WARRANTY

1. Any goods (at your request) not collected/dispatched, shall be stored at your expense and risk. Such goods may be sold or disposed of 30 days after the invoice date to cover the price and coat incurred thereby.
2. Delivery/ completion shall be affected by agreement or any reasonable extension thereof, and no claim(s) shall lie against NicomUSA, Inc. for any reason saves for negligence by NicomUSA, Inc.
3. Each and every Installment delivery shall be considered as a separate contract and shall be subject to full payment prior to any further delivery(ies)
4. Delivery shall be FOB San Diego, California. Shipment to chosen address plus insurance shaft be at consignee's expense
5. Any price increases affecting the quoted price prior to delivery shat be increased accordingly.
6. All quoted prices at NicomUSA's Inc. sole discretion are subject to change/variation by virtue of any condition beyond their control. The price shall not include packing costs for shipping purposes or any taxes, duties, or transportation costs
7. Any damage to the goods must be reported to the carrier in writing on the shipping receipt. Any discrepancy/damage discovered subsequent to delivery shall be reported to NicomUSA. Inc. within 5 business days of its receipt.
8. NicomUSA, Inc. extends to the original end user purchaser all original manufacturers warranties which are non-transferable and all manufactures' warranties will be supported by NicomUSA, Inc. to ensure precise and speedy service when possible.
9. NicomUSA, Inc. shall not be liable for damages of whatsoever nature arising out of connection with the product or its use thereof.
10. NICOMUSA's WARRANTY DOES NOT INCLUDE THE FOLLOWING
    a) Any unauthorized repairs/modifications
    b) Repair of unit whose seal has been broken without Nicom's authorization
    c) Incidental/consequential damages as a result of any defect
    d) Nominal non-incidental defects
    e) Free replacement of semiconductors (transistors, mosfets) and vacuum tubes, which are not covered under any warranty, as well as labor charges to replace them.
    f) Replacement of power supply and fans after the first year
    g) Shipment costs including Insurance of the unit or replacement unit/parts from customer to NicomUSA and vice-versa
11. Warranty shell commence as of the Invoice/shipment date and for the period of 3 years. Any and all warranty work will take place at NicomUsa's facility
12. To claim your rights under this warranty:
    A. Contact the dealer or distributor if unit was purchased through them and if your dealer is not able to assist you then contact Nicom directly or through our website to fill out a return authorization form to obtain a return authorization number.
    B. When you receive the return authorization number, you can return the unit. Pack the unit(s) carefully for shipment and assume carton will be dropped several times during transportation. If equipment is received inadequately packed, there will be a charge for re-packing for re-shipment, The rusk of loos is assumed by you (NicomUSA, Inc. is not responsible for damage or loss) until the package is received at NicomUSA Inc. 1690 Cactus Rd. San Diego CA 92154

    DO NOT RETURN ANY UNITS WITHOUT A RETURN AUTHORIZATION NUMBER, AS IT WILL NOT BE ACCEPTED

    C. Please note in warranty returns where no fault is found with the unit, there will be a $150 minimum labor charge plus return freight. Any unit(s) submitted for repair and not be paid for 30 days after submission will become the property of NicomUSA, Inc.
13. Terms shown on the front of invoice are from date of invoice and not contingent upon delivery. In the event buyer falls to fulfill the terms of payment hereunder, buyer promises to pay all costs and expenses of collection and reasonable attorney's fees incurred by NicomUSA, Inc. on account of collection, whether or not suit is filet thereon. NicomUSA, Inc. Reserves the right to charge interest on all bills not paid at maturity.
14. AS a condition of purchase conducting business with NicomUSA, Inc., the parties agree that should any dispute arise under such transaction for any reason, that venue and jurisdiction, therefore, shall be San Diego Superior Court, Central Court District or Municipal Court of the Country of San Diego, San Diego Judicial District.
15. Interest shall accrue at the rate of 2% per month on all balances incurred for whatever reason remaining unpaid thirty (30) days from the date of invoice.
16. If a buyer has consigned goods to NicomUSA, Inc. for repair within or outside of a warranty product, buyer may lease/rent replacement good AS IS from NicomUSA, Inc... If available. Buyer agrees that any and all of its goods in possession of NicomUSA, Inc. for whatever purpose, shall constitute retained security for the timely return of said rental goods as well as timely payment for repair services performed by NicomUsa,Inc who at its option, may require a deposit paid for any rental goods leased to buyer. Said deposit may be used by NicomUSA, Inc. as satisfaction of any amounts owed to it by buyer in the event of buyer's failure to make any payment required in a timely fashion